

4.3.3.2.1.10 Waste Management

This section summarizes the waste management impacts for the construction and operation of a ceramic immobilization facility. There is no spent nuclear fuel or HLW associated with the operation of the ceramic immobilization facility; however, the facility does generate as its output product a stabilized coated ceramic pellet form that would require interim storage with final disposal at the deep borehole complex whose impacts are outlined in Section 4.3.3.2.2.10. The ceramic immobilization facility would provide the necessary storage of the immobilized Pu in ceramic form until its disposal in the deep borehole complex. Table 4.3.3.2.1.10-1 provides the estimated operational waste volumes projected to be generated as a result of the ceramic immobilization facility at the sites analyzed. Facilities that would support the ceramic immobilization facility would treat and package all generated waste into forms that would enable long-term storage and/or disposal in accordance with the regulatory requirements of RCRA and other applicable statutes. Depending on decisions in waste-type-specific RODs for the Waste Management PEIS, wastes could be treated, and depending on the type of waste disposed of, onsite or at regionalized or centralized DOE sites. For the purposes of analysis only, this PEIS assumes that TRU and mixed TRU waste would be treated onsite to the current planning-basis WIPP WAC, and shipped to WIPP for disposal. This PEIS also assumes that LLW, mixed LLW, hazardous, and nonhazardous waste would be treated and disposed of in accordance with current site practice. The incremental waste volumes generated from the ceramic immobilization facility and the resultant waste effluent used for the waste impact analysis can be found in Section E.3.3.3. A detailed description of the waste management activities that would be required to support the ceramic immobilization facility can also be found in Section E.3.3.3.

Construction and operation of a ceramic immobilization facility would impact existing waste management activities at each of the sites analyzed, increasing the generation of TRU, low-level, mixed, hazardous, and nonhazardous wastes. Waste generated during construction would consist of wastewater, and solid nonhazardous and hazardous wastes. The nonhazardous waste would be disposed of as part of the construction project by the contractor and the hazardous waste would be shipped to commercial RCRA-permitted treatment and disposal facilities. No soil contaminated with hazardous or radioactive constituents is expected to be generated during construction. However, if any is generated it would be managed in accordance with site practice and all applicable Federal and State regulations.

The conceptual design of the ceramic immobilization facility using coated pellets includes a radioactive liquid waste treatment facility which would be required to treat the 110 m³ (30,000 gal) of liquid TRU waste. Approximately 150 m³ (200 yd³) of TRU waste consisting of job-control waste (protective clothing and radiological survey waste), HEPA filters, resins, and solidified sludge from liquid TRU waste treatment would require treatment and repackaging to meet the current planning-basis WIPP WAC or alternative treatment level. Hanford, INEL, and SRS have existing and planned TRU waste facilities that could be utilized. Due to their limited capability to process, package, and store TRU waste, a radwaste facility would need to be constructed as part of the ceramic immobilization facility if sited at ORR, Pantex, and NTS. A small quantity 1.5 m³ (2 yd³) of mixed TRU waste would require processing and packaging to meet the current planning-basis WIPP WAC or alternative treatment level. Mixed TRU waste would be generated if a TRU waste stream became contaminated with a hazardous waste constituent. To transport the TRU and mixed TRU waste to WIPP (depending on decisions made in the ROD associated with the supplemental EIS for the proposed continued phased development of WIPP for disposal of TRU waste), 18 additional truck shipments per year, or if applicable, 9 regular train shipments per year or 3 dedicated train shipments per year would be required.

The radioactive liquid waste treatment facility would also treat the 10 m³ (2,700 gal) of liquid LLW from infrequent container decontamination, laboratory solutions, and scrubber solutions from stacks and exhaust systems. Following treatment and volume reduction, approximately 15 m³ (20 yd³) of LLW from solidified liquid LLW, protective clothing, soil, and small equipment would require disposal. Except for disposal, all of

**Table 4.3.3.2.1.10-1. Estimated Annual Generated Waste Volumes for Ceramic Immobilization Facility (For Borehole)—
Immobilized Disposition Alternative^a**

Category	New Facility (m ³)	Hanford		NTS		INEL		Pantex		ORR		SRS	
		No Action (m ³)	No Action (m ³)	No Action (m ³)	No Action (m ³)	No Action (m ³)	No Action (m ³)	No Action (m ³)	No Action (m ³)	No Action (m ³)	No Action (m ³)	No Action (m ³)	No Action (m ³)
Transuranic													
Liquid	110 ^b	None	None	None	None	None	None	None	None	None	None	None	None
Solid	150	271	None	None	3.5	None	None	None	None	119	338	None	338
Mixed Transuranic													
Liquid	0	None	None	None	None	None	None	None	None	None	None	None	None
Solid	1.5	98	None	None	Included in TRU	None	None	None	None	None	None	Included in TRU	Included in TRU
Low-level													
Liquid	10 ^b	None	Dependent on restoration activities	None	None	8	2,970	74,000					
Solid	23	3,390	15,000	7,200	32	7,320	16,400						
Mixed Low-level													
Liquid	0	3,760	None	4	87,600	1,330							
Solid	0.3	1,505	50	170	46	432	7,700						
Hazardous													
Liquid	45	Included in solid	Included in solid	Included in solid	Included in solid	2	6,460	1,260					
Solid	23	560	212	1,200	31	26	15,100						
Nonhazardous (Sanitary)													
Liquid	43,000	414,000	Not reported separately, included in solid	Not reported separately, included in solid	141,000	550,000	703,000						
Solid	910	5,107	2,120	52,000	339	53,100	61,200						
Nonhazardous (Other)													
Liquid	186,900	Included in sanitary	Included in sanitary	None	Included in sanitary	650,000	Included in sanitary						
Solid	15 ^c	Included in sanitary	76,500	Included in sanitary	Included in sanitary	321	Included in sanitary						

^a The No Action volumes are from Tables 4.2.1.10-1, 4.2.2.10-1, 4.2.3.10-1, 4.2.4.10-1, 4.2.5.10-1, and 4.2.6.10-1. Incremental waste generation volumes for the ceramic immobilization facility were derived from Table E.3.3.3-1. Waste effluent volumes (that is, after treatment and volume reduction) which are used in the narrative description of the impacts are also provided in Table E.3.3.3-1.

^b Liquid TRU and LLW would be treated and solidified prior to disposal.

^c Recyclable wastes.

the sites analyzed have existing or planned facilities that could manage the small quantities of LLW. Using the land usage factors from Section E.1.4, the area required for LLW disposal would be 0.004 ha/yr (0.01 acres/yr) at Hanford and ORR, 0.003 ha/yr (0.006 acres/yr) at NTS and INEL, and 0.002 ha/yr (0.004 acres/yr) at SRS. With no onsite LLW disposal capability, Pantex would require one additional LLW shipment per year to NTS. The ultimate disposal of LLW will be in accordance with the ROD(s) from the Waste Management PEIS.

A small quantity (0.3 m^3 [0.4 yd^3]) of solid mixed LLW consisting of contaminated solvent rags and equipment that have been contaminated with both radioactive and hazardous constituents would require treatment to meet the land disposal restrictions of RCRA. Mixed LLW would be managed in accordance with the Tri-Party Agreement for Hanford and the respective site treatment plan that was developed to comply with the *Federal Facility Compliance Act* for the remainder of the sites analyzed.

An estimated 45 m^3 (12,000 gal) of liquid and 23 m^3 (30 yd^3) of solid hazardous wastes would be generated. Hazardous waste would consist primarily of analytical solutions and solvent rags contaminated with methylene chloride, acetonitrile, and acetone. Other hazardous waste would include paint solvents, various laboratory chemicals, and organic waste from nonradioactive testing. Hazardous waste would be stored in RCRA-permitted facilities until sufficient quantity accumulated to warrant shipment to a RCRA-permitted treatment and disposal facility.

Approximately $43,000 \text{ m}^3$ (11,500,000 gal) of liquid nonhazardous sanitary and industrial wastewater and $186,900 \text{ m}^3$ (49,500,000 gal) of steam plant blowdown, process wastewater, and estimated stormwater runoff would require treatment in accordance with site practice and discharge permits. Construction of sanitary, utility, and process wastewater treatment systems may be required. The 910 m^3 ($1,200 \text{ yd}^3$) of solid nonhazardous waste such as paper, glass, discarded office material, and cafeteria waste that is not recycled or salvageable would be shipped to an onsite or offsite landfill in accordance with site-specific practice.